

PATTERN CERTIFICATION

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A Unit of SPX Corporation

PATTERN CERTIFICATION

Method of Measurement

The azimuth pattern for "WORQ", Dielectric Document Sketch # 46, was measured in the following manner.

A single 4.4 to 1 scale model "DCRM" bay radiator was mounted on a similarly scaled model of the tower according to information provided to Dielectric by the customer; refer to Dielectric Document Sketch # 46. The antenna under test, all parasitics, all known tower appurtenances, and the tower section were rotated through 360 degrees while receiving a signal at the appropriate frequency from a linear cavity-backed source antenna. Both the horizontal and vertical polarization azimuth patterns were measured in an anechoic test range.

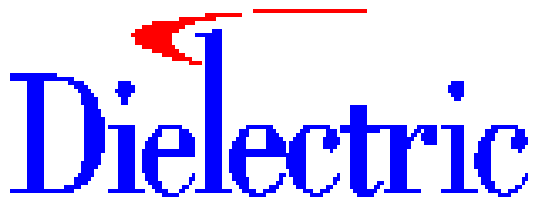
The transmit and scale model antennas are mounted at identical elevations and at opposite ends of the chamber. A Hewlett Packard model 8711A network analyzer was used to supply the RF signal the source antenna at 4.4 times the fundamental FM frequency and to receive the signal intercepted by the antenna under test. The received signal to was converted to a relative level, referenced to the source. This level was stored on a computer acting as the master controller. The computer controls the measurement system via IEEE-488 control bus through a GPIB card.

Statement of Qualifications

John Schadler is the Director of Antenna Design and Development here at Dielectric. He has been working for Dielectric since 1986. He received a BS in Electrical Engineering from Penn State University, and a Masters in Electrical Engineering from Drexel University. He has multiple patents in the areas of circular polarization, centerfed antennas, broadband and multi-channel antennas, common aperture antennas, and DTV antennas.

Signed by: _____

Date: _____

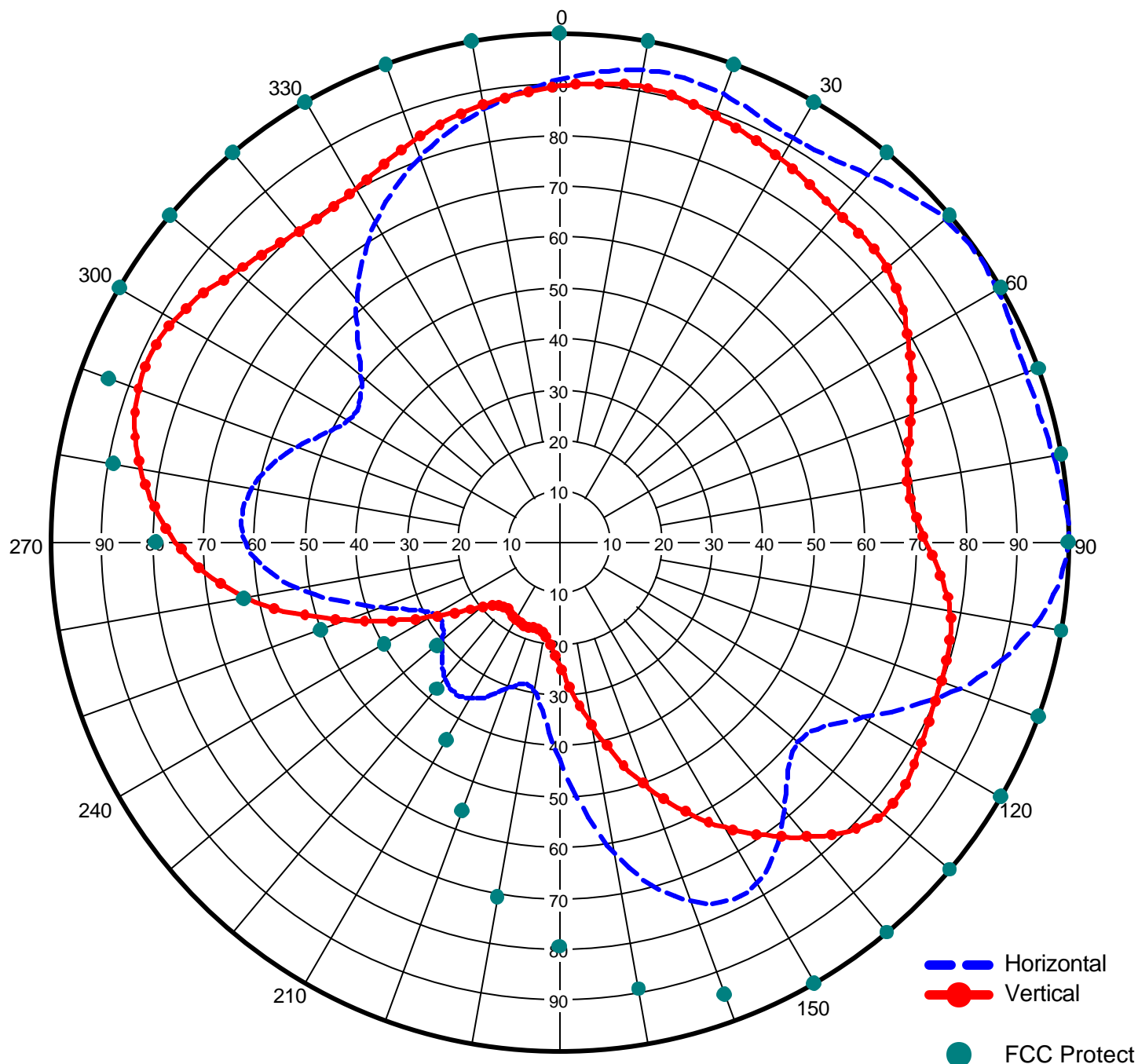


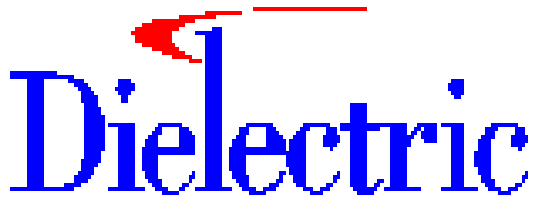
Proposal Number **72700**
Date **Aug 29, 2002**
Call Letters **WORQ**
Location **Green Bay, WI**
Customer **Steve Konopka**
Antenna Type **DCRM3ED**

AZIMUTH PATTERN

87.4% Ccov - 50.6% Hrms - 49.4% Vrms

Calculated / Measured **Measured** Frequency **90.1**
Drawing # **46**



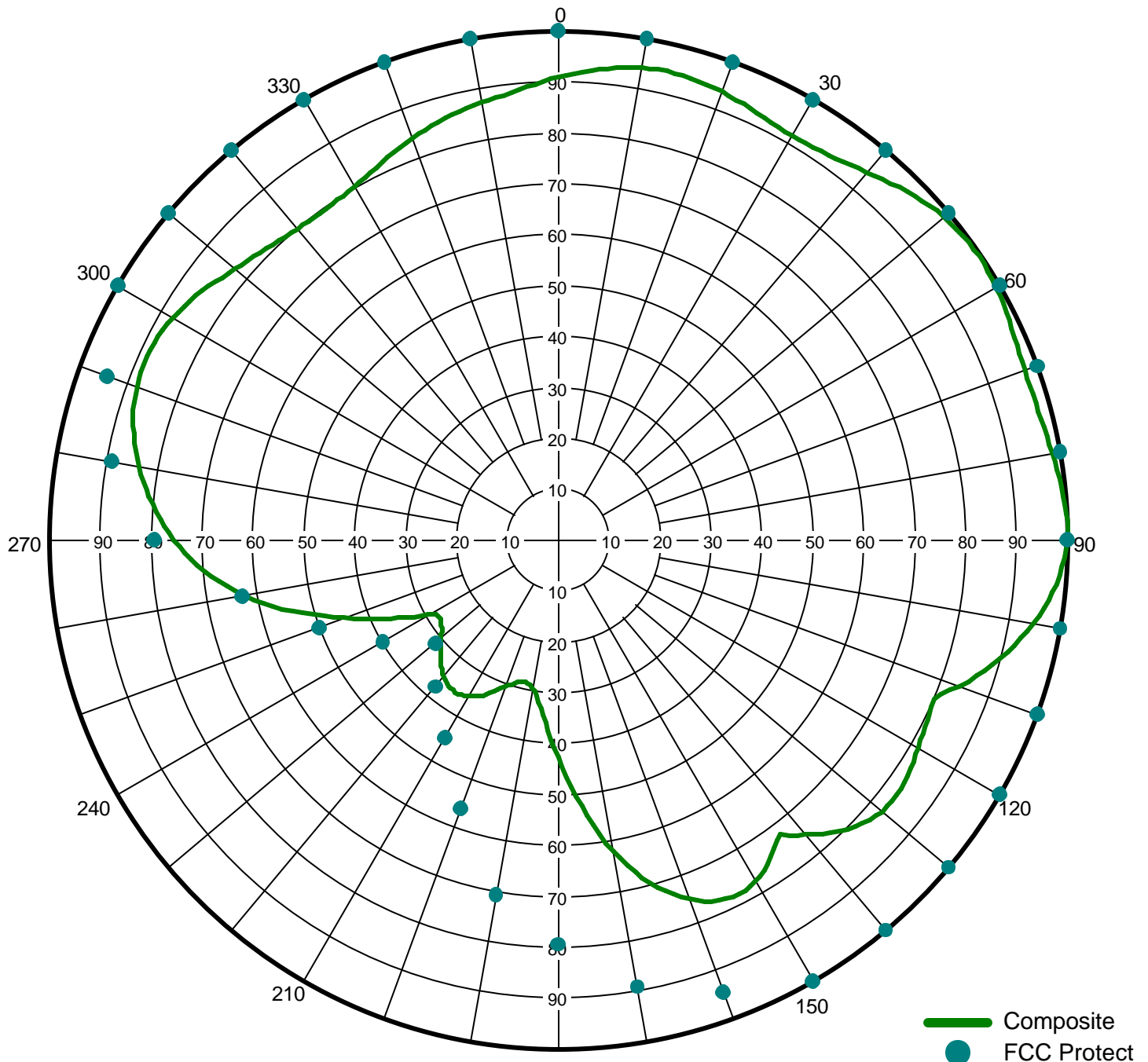


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CUSTOMER GAIN SUMMARY

Azimuth Pattern Gain of Horizontal Polarization	1.92
Elevation Pattern Gain Per Polarization	1.50
Peak Gain at Horizontal Polarization	2.88

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TABULATION OF HORIZONTAL AZIMUTH PATTERN

Angle	Field	dBk	Power kW
0	0.911	9.604	9.129
10	0.944	9.913	9.802
20	0.935	9.830	9.616
30	0.918	9.671	9.270
40	0.948	9.950	9.886
50	0.991	10.335	10.803
60	0.991	10.335	10.803
70	0.975	10.194	10.457
80	0.988	10.309	10.738
90	0.997	10.388	10.934
100	0.939	9.867	9.699
110	0.823	8.722	7.451
120	0.676	7.013	5.027
130	0.612	6.149	4.120
140	0.698	7.291	5.359
150	0.779	8.245	6.675
160	0.742	7.822	6.056
170	0.602	6.006	3.986
180	0.409	2.648	1.840
190	0.290	-0.338	0.925
200	0.313	0.325	1.078
210	0.357	1.467	1.402
220	0.347	1.221	1.324
230	0.295	-0.190	0.957
240	0.286	-0.459	0.900
250	0.386	2.146	1.639
260	0.535	4.981	3.148
270	0.622	6.290	4.256
280	0.609	6.106	4.080
290	0.541	5.078	3.219
300	0.476	3.966	2.492
310	0.518	4.701	2.952
320	0.632	6.428	4.394
330	0.734	7.728	5.926
340	0.811	8.594	7.235
350	0.870	9.204	8.326

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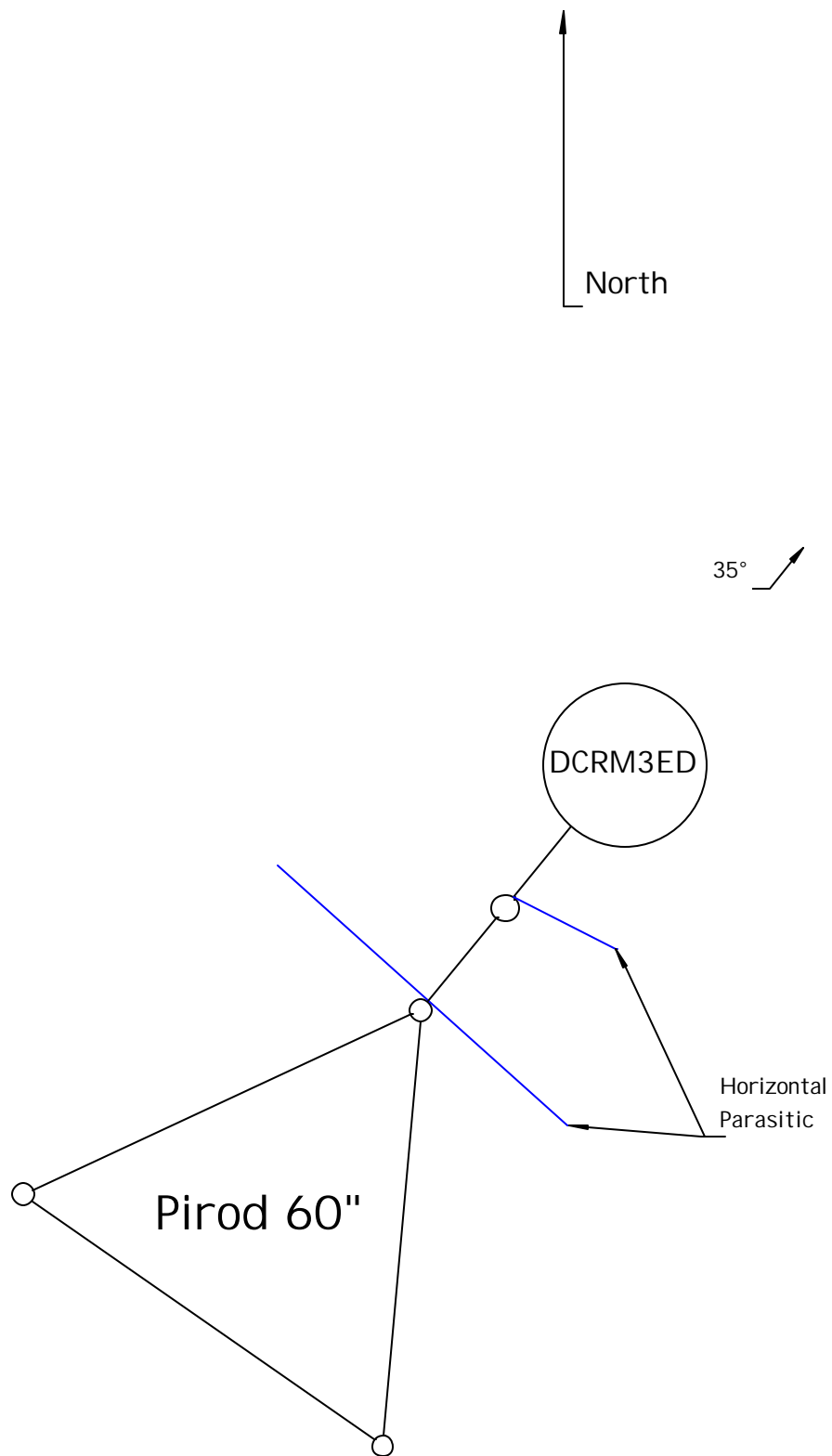
TABULATION OF HORIZONTAL AZIMUTH PATTERN

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
0	0.911	45	0.973	90	0.997	135	0.644	180	0.409	225	0.322	270	0.622	315	0.572
1	0.915	46	0.977	91	0.995	136	0.654	181	0.392	226	0.316	271	0.625	316	0.584
2	0.918	47	0.982	92	0.991	137	0.664	182	0.375	227	0.311	272	0.626	317	0.596
3	0.922	48	0.985	93	0.987	138	0.675	183	0.359	228	0.305	273	0.627	318	0.608
4	0.926	49	0.989	94	0.982	139	0.686	184	0.345	229	0.300	274	0.626	319	0.620
5	0.930	50	0.991	95	0.976	140	0.698	185	0.332	230	0.295	275	0.625	320	0.632
6	0.934	51	0.993	96	0.970	141	0.709	186	0.320	231	0.291	276	0.623	321	0.643
7	0.937	52	0.995	97	0.963	142	0.719	187	0.310	232	0.287	277	0.620	322	0.654
8	0.940	53	0.996	98	0.955	143	0.730	188	0.301	233	0.284	278	0.617	323	0.665
9	0.942	54	0.997	99	0.947	144	0.740	189	0.295	234	0.281	279	0.613	324	0.675
10	0.944	55	0.997	100	0.939	145	0.749	190	0.290	235	0.279	280	0.609	325	0.686
11	0.945	56	0.996	101	0.930	146	0.757	191	0.287	236	0.278	281	0.604	326	0.696
12	0.946	57	0.996	102	0.920	147	0.764	192	0.286	237	0.278	282	0.598	327	0.705
13	0.946	58	0.995	103	0.910	148	0.771	193	0.286	238	0.280	283	0.592	328	0.715
14	0.945	59	0.993	104	0.899	149	0.775	194	0.288	239	0.282	284	0.586	329	0.724
15	0.944	60	0.991	105	0.888	150	0.779	195	0.290	240	0.286	285	0.579	330	0.734
16	0.943	61	0.990	106	0.876	151	0.781	196	0.294	241	0.291	286	0.572	331	0.743
17	0.942	62	0.987	107	0.864	152	0.781	197	0.298	242	0.298	287	0.565	332	0.751
18	0.940	63	0.985	108	0.851	153	0.781	198	0.303	243	0.305	288	0.557	333	0.760
19	0.938	64	0.983	109	0.838	154	0.779	199	0.308	244	0.314	289	0.549	334	0.768
20	0.935	65	0.981	110	0.823	155	0.775	200	0.313	245	0.324	290	0.541	335	0.776
21	0.933	66	0.979	111	0.809	156	0.771	201	0.318	246	0.335	291	0.532	336	0.784
22	0.930	67	0.977	112	0.794	157	0.765	202	0.324	247	0.347	292	0.524	337	0.791
23	0.927	68	0.976	113	0.779	158	0.759	203	0.329	248	0.359	293	0.515	338	0.798
24	0.925	69	0.975	114	0.763	159	0.751	204	0.334	249	0.372	294	0.507	339	0.805
25	0.923	70	0.975	115	0.748	160	0.742	205	0.339	250	0.386	295	0.500	340	0.811
26	0.921	71	0.974	116	0.733	161	0.732	206	0.344	251	0.401	296	0.493	341	0.817
27	0.919	72	0.975	117	0.718	162	0.721	207	0.348	252	0.416	297	0.487	342	0.822
28	0.918	73	0.975	118	0.703	163	0.710	208	0.352	253	0.431	298	0.482	343	0.828
29	0.917	74	0.976	119	0.690	164	0.697	209	0.355	254	0.447	299	0.479	344	0.834
30	0.918	75	0.978	120	0.676	165	0.683	210	0.357	255	0.462	300	0.476	345	0.839
31	0.918	76	0.979	121	0.664	166	0.669	211	0.359	256	0.478	301	0.475	346	0.845
32	0.920	77	0.981	122	0.652	167	0.654	212	0.360	257	0.493	302	0.476	347	0.851
33	0.922	78	0.983	123	0.642	168	0.637	213	0.361	258	0.508	303	0.477	348	0.857
34	0.924	79	0.985	124	0.633	169	0.620	214	0.360	259	0.522	304	0.480	349	0.863
35	0.927	80	0.988	125	0.625	170	0.602	215	0.360	260	0.535	305	0.484	350	0.870
36	0.931	81	0.990	126	0.619	171	0.584	216	0.358	261	0.548	306	0.488	351	0.877
37	0.934	82	0.992	127	0.614	172	0.565	217	0.356	262	0.560	307	0.494	352	0.884
38	0.939	83	0.995	128	0.612	173	0.545	218	0.354	263	0.571	308	0.501	353	0.890
39	0.943	84	0.997	129	0.611	174	0.525	219	0.350	264	0.582	309	0.509	354	0.897
40	0.948	85	0.998	130	0.612	175	0.505	220	0.347	265	0.591	310	0.518	355	0.902
41	0.953	86	0.999	131	0.616	176	0.486	221	0.342	266	0.600	311	0.528	356	0.906
42	0.958	87	1.000	132	0.621	177	0.466	222	0.338	267	0.607	312	0.538	357	0.909
43	0.963	88	1.000	133	0.627	178	0.446	223	0.333	268	0.613	313	0.549	358	0.911
44	0.968	89	0.999	134	0.635	179	0.428	224	0.327	269	0.618	314	0.561	359	0.909

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TABULATION OF VERTICAL AZIMUTH PATTERN

Angle	Field	dBk	Power kW
0	0.897	9.470	8.851
10	0.910	9.595	9.109
20	0.890	9.402	8.713
30	0.867	9.174	8.269
40	0.847	8.972	7.891
50	0.837	8.868	7.706
60	0.786	8.322	6.796
70	0.730	7.680	5.862
80	0.694	7.241	5.298
90	0.726	7.633	5.798
100	0.783	8.289	6.744
110	0.799	8.465	7.022
120	0.819	8.680	7.378
130	0.827	8.764	7.523
140	0.746	7.869	6.122
150	0.634	6.456	4.422
160	0.501	4.411	2.761
170	0.351	1.320	1.355
180	0.232	-2.276	0.592
190	0.179	-4.529	0.352
200	0.177	-4.627	0.345
210	0.173	-4.825	0.329
220	0.167	-5.132	0.307
230	0.203	-3.436	0.453
240	0.307	0.157	1.037
250	0.466	3.782	2.389
260	0.642	6.565	4.534
270	0.764	8.076	6.421
280	0.843	8.930	7.817
290	0.883	9.333	8.577
300	0.870	9.204	8.326
310	0.825	8.743	7.487
320	0.797	8.443	6.987
330	0.804	8.519	7.111
340	0.843	8.930	7.817
350	0.877	9.274	8.460



WORQ - 90.1

Document Sketch # 46

2 Horizontal Parasitics

Leg Azimuths @ 30°, 150°, 270°

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MEASURED ELEVATION PATTERN

RMS Gain at Main Lobe **1.50 (1.76 dB)**
Per Polarization

Beam Tilt **0.00 deg**
Frequency **90.10 MHz**
Plane **Typical**

